

What is claimed is:

1. A method for manufacturing a homeotropic alignment liquid crystal film, wherein a side chain type liquid crystal polymer comprising a monomer unit (a) containing a liquid crystalline fragment side chain and a monomer unit (b) containing a non-liquid crystalline fragment side chain is coated on a substrate on which a vertical alignment film is not prepared, and the liquid crystal polymer is fixed while maintaining an alignment state after the liquid crystal polymer is homeotropically aligned in liquid crystal state.

2. The method for manufacturing a homeotropic alignment liquid crystal film according to claim 1, wherein a material of a substrate is polymer, glass or metal.

3. A homeotropic alignment liquid crystal film obtainable by the manufacturing method according to claim 1.

4. An optical film wherein a homeotropic alignment liquid crystal film layer in which a liquid crystal polymer is homeotropically aligned is prepared on a substrate without a vertical alignment layer.

5. The optical film according to claim 4, wherein the liquid crystal polymer is a side chain type liquid crystal polymer comprising a monomer unit (a) containing a liquid crystalline fragment side chain and a monomer unit (b) containing a non-liquid crystalline fragment side chain.

6. A visual display applying the optical film according to claim 4.

7. A homeotropic alignment liquid crystalline composition comprising a side chain type liquid crystal polymer being able to form a homeotropic alignment liquid crystal layer on a substrate on which a vertical alignment film is not prepared and a photopolymerizable liquid crystal compound.

8. The homeotropic alignment liquid crystalline composition according to claim 7, wherein the side chain type liquid crystal polymer comprises a monomer unit (a) containing a liquid crystalline fragment side chain and a monomer unit (b) containing a non-liquid crystalline fragment side chain.

9. A method for manufacturing a homeotropic alignment liquid crystal film, wherein the homeotropic alignment liquid crystalline composition according to claim 7 is coated on a substrate on which a vertical alignment film is not prepared subsequently the homeotropic alignment liquid crystalline composition is homeotropically aligned in liquid crystal state and is applied an optical irradiation after fixed in a state of alignment state being maintained.

10. The method for manufacturing a homeotropic alignment liquid crystal film according to claim 9, wherein a material of the substrate is polymer substance, glass or metal.

11. A homeotropic alignment liquid crystal film obtainable by the manufacturing method according to claim 9.

12. An optical film, wherein a homeotropic alignment film layer in which the homeotropic alignment liquid crystal compound according to claim 7 is homeotropically aligned and fixed, is prepared on a substrate without a vertical alignment film.

13. A visual display applying the optical film according to claim 12.